

Name \_\_\_\_\_

AP Chemistry

## Electrolytes & Molarity

*Vocabulary:*

Define and illustrate each term:

- Solute
- Solvent
- Strong electrolytes
- Nonelectrolytes
- Weak electrolytes

*Molarity:*

$$\text{Molarity} = \frac{\text{moles of solute}}{\text{liters of solution}}$$

Example:

Calculate the molarity of a solution prepared by dissolving 11.5 g of solid NaOH in enough water to make 1.50 L of solution.

- 1) Calculate the number of grams of solute in 0.250 L of 0.150 M KBr.

2) Calculate the volume of 1.50 M  $\text{Na}_3\text{PO}_4$  in milliliters that contains 5.00g of solute.

3) (a) How many moles of  $\text{KMnO}_4$  are present in 125 mL of a 0.0850 M solution?

(b) How many milliliters of 11.6 M  $\text{HCl}$  solution are needed to obtain 0.255 mol of  $\text{HCl}$ ?

*Dilution Law:*

Example:

What volume of 16 M sulfuric acid must be used to prepare 1.5 L of 0.10 M  $\text{H}_2\text{SO}_4$  solution?

1) (a) You have a stock solution of 14.8 M  $\text{NH}_3$ . How many milliliters of this solution should you dilute to make 100.0 mL of 0.250 M  $\text{NH}_3$ ?

(b) If you take a 10.0 mL portion of the stock solution and dilute it to a total volume of 0.250 L, what will be the concentration of the final solution?

2) Describe how you would prepare 400.0 mL of 0.100 M  $\text{C}_{12}\text{H}_{22}\text{O}_{11}$  starting with 2.00 L of 1.50 M  $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ .

3) (a) How many milliliters of a stock solution of 10.0 M  $\text{HNO}_3$  would you have to use to prepare 0.350 L of 0.400 M  $\text{HNO}_3$ ?

(b) If you dilute 25.0 mL of the stock solution to a final volume of 0.500 L, what will be the concentration of the diluted solution?